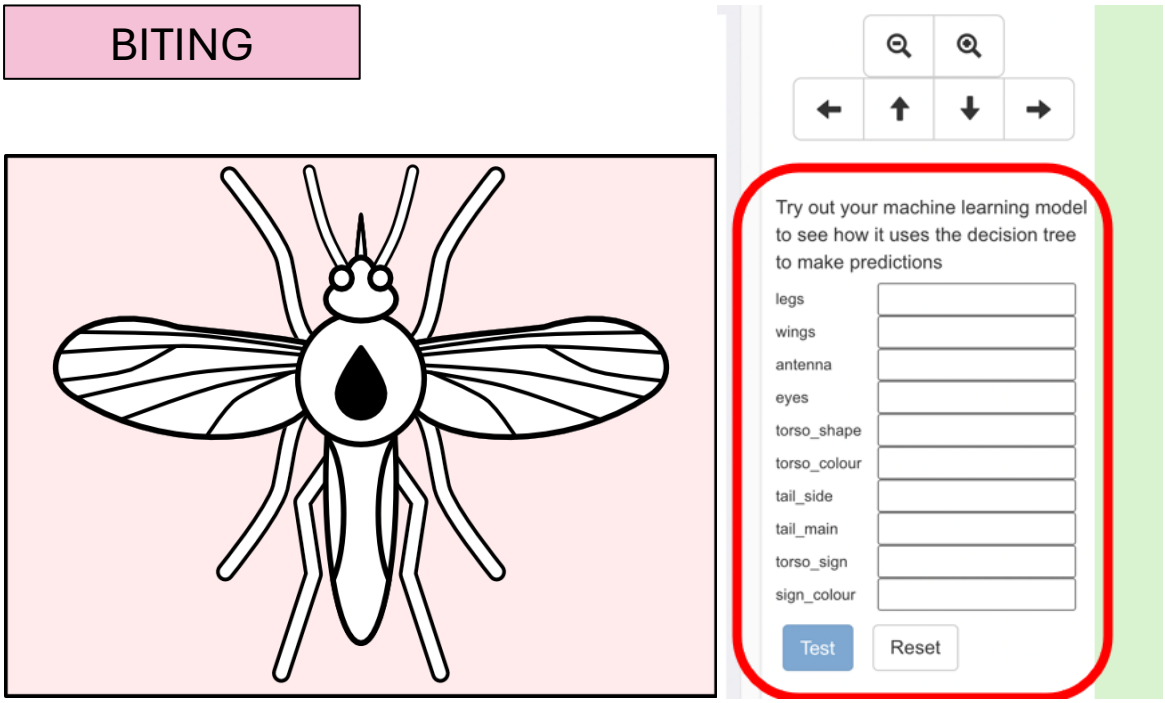
# Midge Project – Recognising Patterns in Numerical Data

**Introduction**

Train a machine learning model to recognise patterns in numerical data and help classify midges as **biting** vs **non-biting**.




You will need:

- ML for Kids
- CSV files: **biting.csv** and **non-biting.csv**

- This project uses a technology called 'machine learning'. Machine learning systems are trained using a large amount of data.
- This project does not require you to create an account or log in. For this project, the examples you use to make the model are only stored temporarily in your browser (only on your machine).

## Set Up the Project

Go to machinelearningforkids.co.uk in a web browser.

Click on **Get started**.

Click on **Try it now**.

Click on **Projects** in the menu bar at the top.

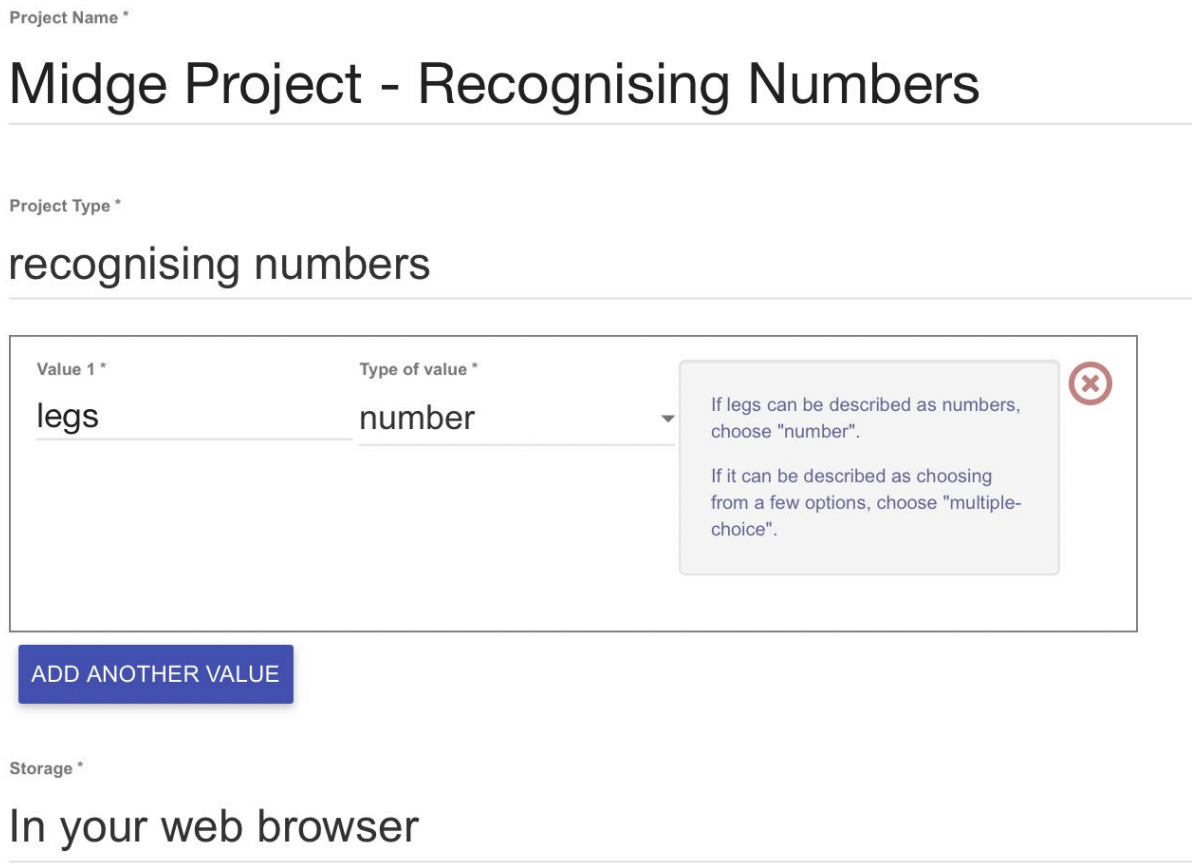
Click on the **+ Add a new project** button.

Name your project Midge Project – Recognising Numbers and set it to learn to recognise **numbers**, and store data in your web browser.

Before you click on **Create** you will have to add values to recognise.

Click **ADD VALUE** button

For Value 1 type “legs’ and for Type of value select “number”.



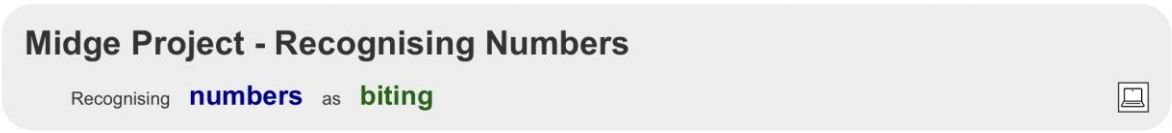

Click ADD ANOTHER VALUE and repeat the process for Values 2 to 10.

| | name | type of value |
|---|---|---|
| value1 | legs | number |
| value2 | wings | number |
| value3 | antenna | number |
| value4 | eyes | number |
| value5 | torso_shape | number |
| value6 | torso_colour | number |
| value7 | tail_side | number |
| value8 | tail_main | number |
| value9 | torso_sign | number |
| value10 | sign_colour | number |

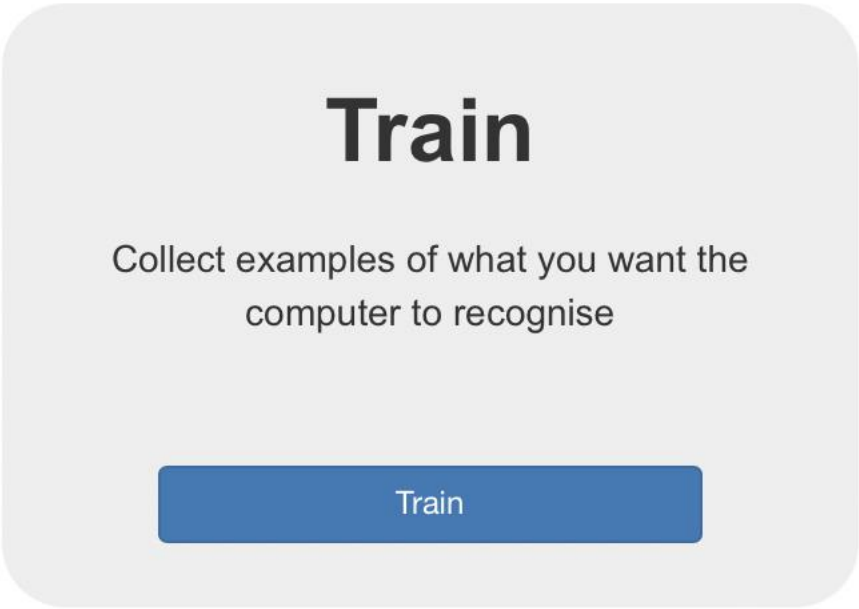
NOTE: Pay close attention to the value names. If you are using the supplied .csv files you **must** type them exactly as you see them here with correct spellings, lowercase and underscore.

Once you are ready, click **Create**.

Click on your project



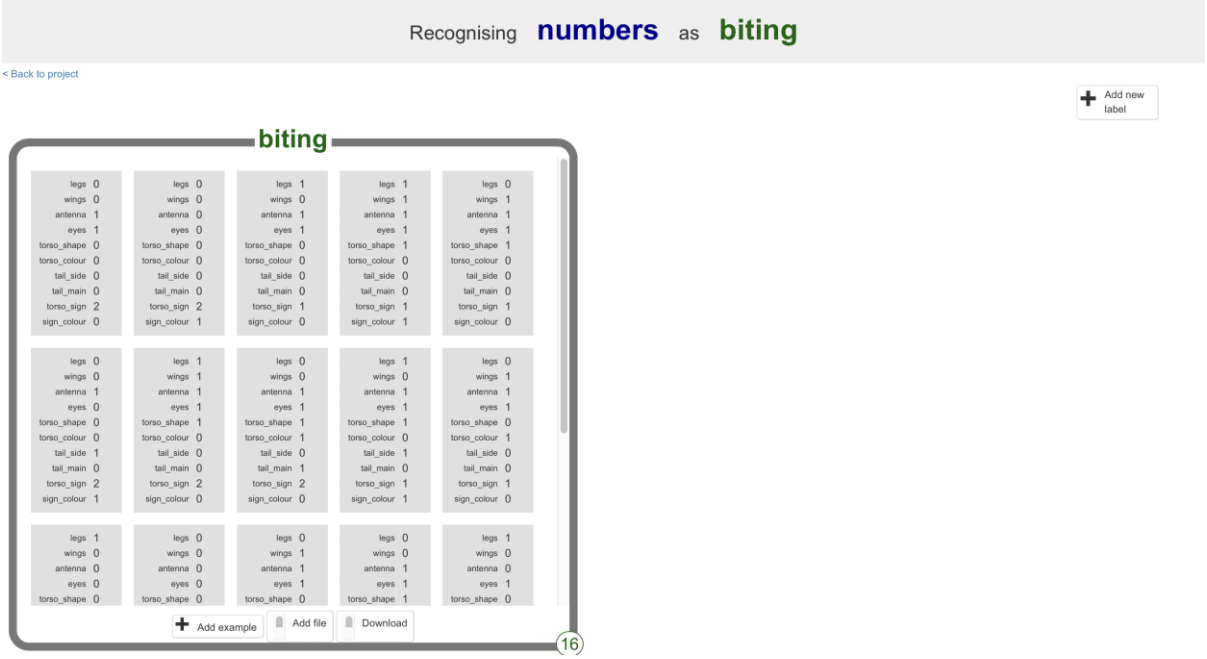

Click Train



Click +Add new label and type “biting”

Click Add file and locate the file biting.csv

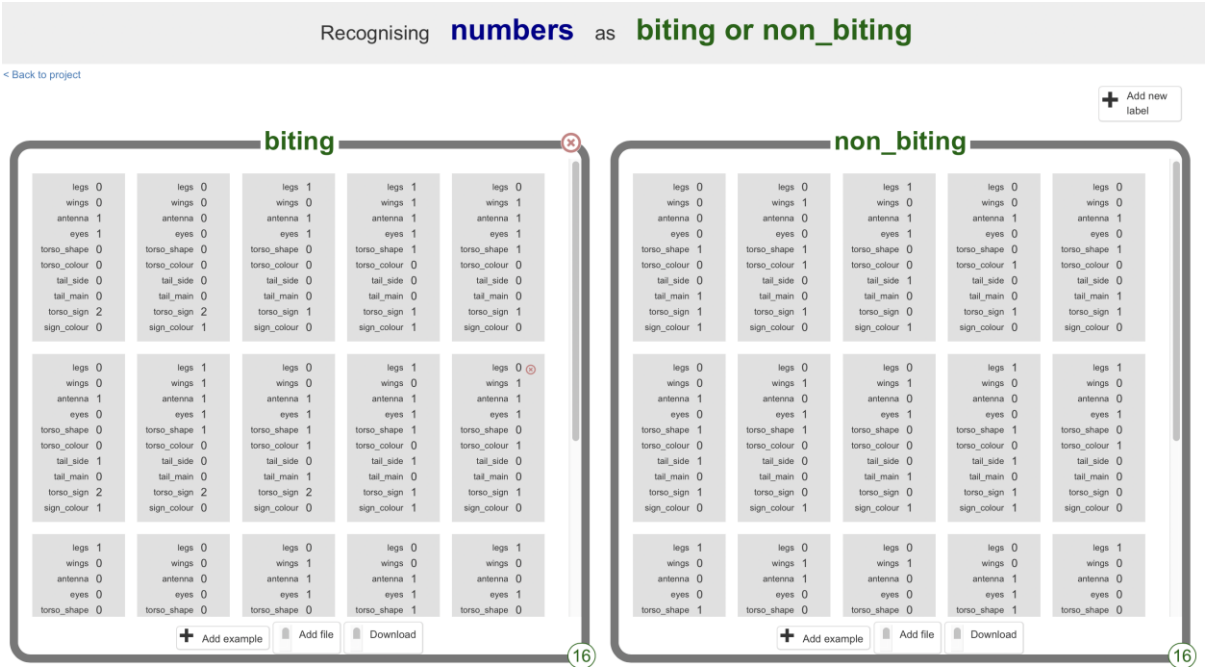
If you have named your fields accurately the model will import 16 sets of midge number data.




Repeat the process for non-biting midge data.

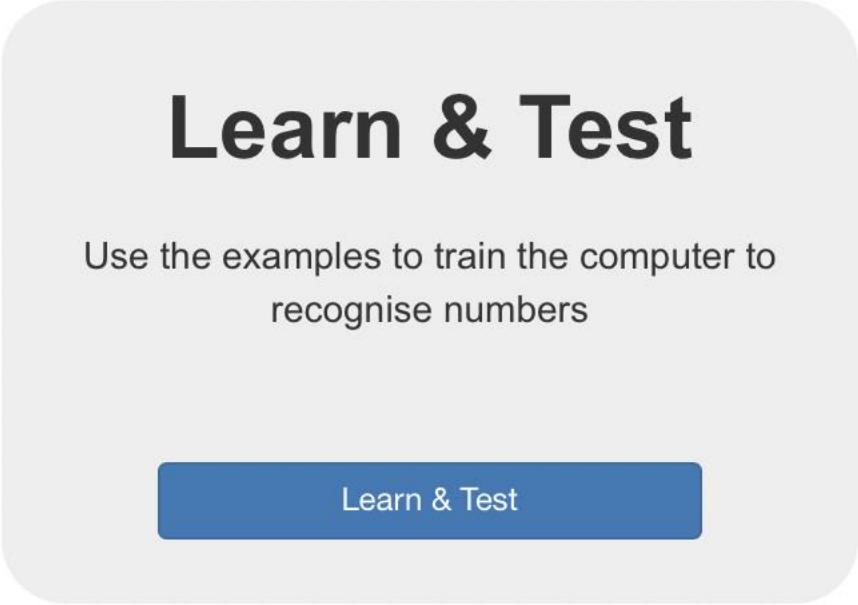
Click +Add new label and type “non_biting”

Click Add file and locate the file non-biting.csv




Click <Back to project

Click Learn & Test



< Back to project

## What have you done?

You have collected examples of numbers for a computer to use to recognise when numbers are biting or non_biting.

You've collected:

- 16 examples of biting,
- 16 examples of non_biting

## What's next?

Ready to start the computer's training?

Click the button below to start training a machine learning model using the examples you have collected so far

(Or go back to the Train page if you want to collect some more examples first.)

**Info from training computer:**

Train new machine learning model

Click Train new machine learning model

Once the model has been trained you can test it by entering some values.

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## What have you done?

You have trained a machine learning model to recognise when numbers are biting or non_biting.

You created the model on Tuesday, February 25, 2025 9:03 PM.

You have collected:

- 16 examples of biting,
- 16 examples of non_biting

## What's next?

Try testing the machine learning model below. Enter an example of numbers below, that you didn't include in the examples you used to train it. It will tell you what it recognises it as, and how confident it is in that.

If the computer seems to have learned to recognise things correctly, then you can go to Scratch and use what the computer has learned to make a game!

If the computer is getting too many things wrong, you might want to go back to the Train page and collect some more examples

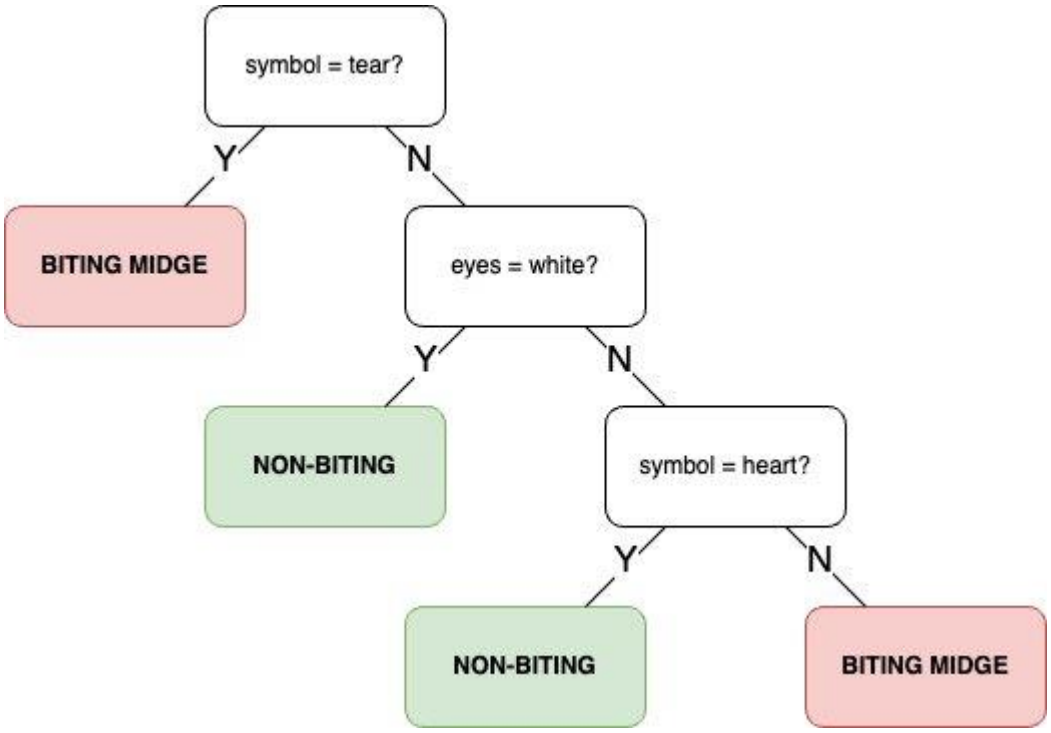
Once you've done that, click on the button below to train a new machine learning model and see what difference the extra examples will make!

Try putting in some numbers to see how it is recognised based on your training.

| | |
|---|---|
| legs | |
| wings | |
| antenna | |
| eyes | |
| torso_shape | |
| torso_colour | |
| tail_side | |
| tail_main | |
| torso_sign | |
| sign_colour | |

Test | Describe your model!

Remember our Decision tree from Lesson 1

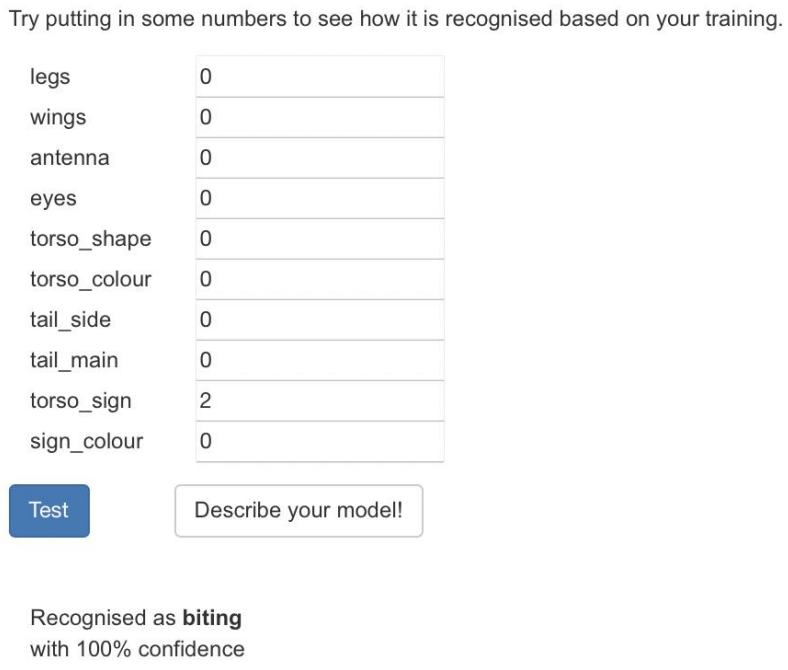



Midges with torso_sign = tear should be biting midge.

To test your model, try entering “2” for torso_sign and make all other values “0”.

(Remember 0 = heart, 1 = star, 2 = tear)

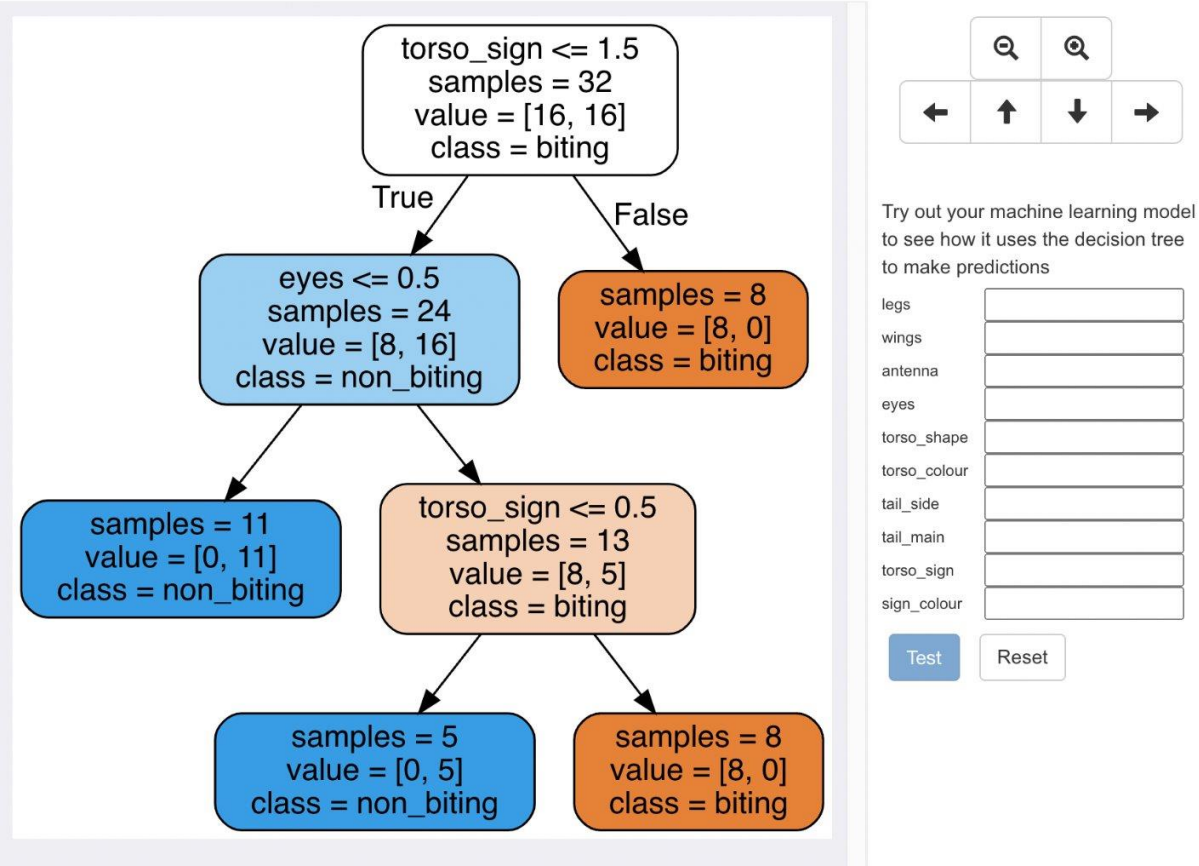
Press Test




Your model should recognise **biting** with 100% confidence.

When you are ready click “Describe your model!”

You will be presented with a decision tree representing your model!




Take your time to understand what each node on the decision tree means.

Now try out your machine learning model to see how it uses the decision tree to make predictions.